

ICD作動時に心室波高値が著しく低下し作動様式の解析が困難であった一症例

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- 1) 患者背景
76歳 男性。陳旧性心筋梗塞を合併した持続性心室頻拍(VT)。
- 2) 適応経緯
2008年VTに対してカテーテルアブレーションを施行するが、不成功であり、同年にICD埋め込みを施行した。
- 3) デバイス情報
2008年ICD左前胸部埋め込み
BostonScientific社製 本体:VITALITY DR / 1871
A Lead:FINELINE II / 4480 RV Lead:ENDOTAK / 0155
2014年 BostonScientific社製 ENERGEN / F143へ電池交換
- 4) フォロー経過
2015年3月ICD作動を認め当科救急受診。ICD checkでは、VTでの作動を認め、意識下に抗頻拍ペーシング、ショック共に7回ずつ行われていた。心内波高は初回ショック後1mV以下と極度に低下し様々な作動様式が考えられた。洞調律中の心内波高は18.0mV以上で安定していた。
その他、異常所見は見当たらなかった。
- 5) その他特記事項
2008年新規ICD埋め込み術では右室心尖部の波高値は低く前壁側のリード留置となっている。
- 6) 論点
ICD作動様式の解析、心室波高値の極度の低下要因と対応について議論したい。

※「Device Parameter」「Episode」「胸部レントゲン」は以下に示す。
※EpisodeのRV心内波高は実際では評価困難なため倍増した波形を示す。
Event記録時間が長時間のため一部省略。

デバイス設定

ZOOM @ View™
Device Settings Report

Report Created 03 Mar 2015

Device: ENERGEN ICD F143/103179
Tachy Mode: Monitor - Therapy

Last Office Interrogation: 22 Jan 2015
Implant Date: 26 Nov 2014

Programming
Last Programmed: 02 Dec 2014
Ventricular Tachy Mode: 03 Mar 2015 Changed to Monitor - Therapy
03 Mar 2015 Changed to Monitor Only
03 Mar 2015 Changed to Off
26 Nov 2014 Changed to Monitor - Therapy

Ventricular Tachy
VF 190 min⁻¹ (316 ms)
Detection/Redetection: 1.0 s
Initial Duration: 1.0 s
Redetection Dur: 1.0 s
Post-shock Dur: 1.0 s

Therapy: QUICK CONVERT™ ATP On
Shock 1: 41 J
Shock 2: 41 J
Additional 41 J Shocks: 6

VT 150 min⁻¹ (400 ms)
Detection/Redetection: 3.5 s
Initial Duration: 3.5 s
ATP1: Number of Bursts 5
Ramp: 5

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Device Settings Report

03 Mar 2015 17:4

Ventricular Tachy (Continued)
VT 150 min⁻¹ (400 ms)
Detection/Redetection: 1.0 s
Redetection Dur: 1.0 s
Post-shock Dur: 1.0 s

Enhancements: Rhythm ID On
VT Detection: On
Initial Detection: On
Sustained Rate Duration: 03:00 mm:ss
Post-Shock Detection: Off
Rhythm ID Setup: On
Passive Method: On
Active Method: On
Temporary LRL: 50 min⁻¹

Common Parameters: Atrial Tachy Discrimination On
AFib Rate Threshold: 170 min⁻¹
Stability: 20 ms

ATP1: Pulses per Burst Initial 10, Increment 0, Decrement 0 ms
Coupling Interval: 81 %
Decrement: 0 ms
Burst Cycle Length: 81 %
Ramp Decrement: 10 ms
Scan Decrement: 0 ms
Minimum Interval: 200 ms

ATP2: Number of Bursts 3
Scan: 3

ATP Time-out: 01:00 mm:ss
Shocks: Shock 1 41 J, Shock 2 41 J, Shock 3-6 41 J

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Ventricular Tachy (Continued)
VT-1 130 min⁻¹ (462 ms)
Detection/Redetection: 1.0 s
Redetection Dur: 1.0 s
Post-shock Dur: 1.0 s

Enhancements: Rhythm ID On
VT-1 Detection: On
Initial Detection: On
Sustained Rate Duration: 30:00 mm:ss
Post-Shock Detection: Off
Rhythm ID Setup: On
Passive Method: On
Active Method: On
Temporary LRL: 50 min⁻¹

Common Parameters: Atrial Tachy Discrimination On
AFib Rate Threshold: 170 min⁻¹
Stability: 20 ms

ATP1: Pulses per Burst Initial 15, Increment 0, Decrement 0 ms
Coupling Interval: 81 %
Decrement: 0 ms
Burst Cycle Length: 81 %
Ramp Decrement: 0 ms
Scan Decrement: 10 ms
Minimum Interval: 200 ms

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Device Settings Report

03 Mar 2015 17:4

Ventricular Tachy (Continued)
VT-1 130 min⁻¹ (462 ms)
Detection/Redetection: 4.0 s
Initial Duration: 4.0 s
ATP1: Number of Bursts 5
Ramp: 5

Ventricular Tachy Therapy Setup:
ATP: Ventricular ATP Amplitude 7.5 V, Waveform Biphasic
Ventricular ATP Pulse Width 1.0 ms, Committed Shock Off
Magnet and Beep: Lead Polarity Reversed
Magnet Response: Inhibit Therapy
Beep During Capacitor Charge: Off

Shock (All Shocks): Shock Lead Vector RV Coil to RA Coil and Can

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Atrial Tachy
Therapy: ATR Mode Switch Details
ATR Mode Switch: On
Trigger Rate: 170 min⁻¹
Duration: 8 cycles
Entry Count: 8 cycles
Exit Count: 8 cycles
Fallback: VDI
Time: 00:30 mm:ss
ATR/VTR Fallback LRL: 70 min⁻¹
Ventricular Rate Regulation: On
Maximum Pacing Rate: 110 min⁻¹

Atrial Tachy Response: Atrial Flutter Response Off, PMT Termination On

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Device Settings Report

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Brady
Normal Settings:
Mode: DDDR
RYTHMIO™: AAIR With VVI Backup
Lower Rate Limit: 50 min⁻¹
Maximum Tracking Rate: 110 min⁻¹
Maximum Sensor Rate: 110 min⁻¹
Paced AV Delay: 290 - 290 ms
Sensed AV Delay: 290 - 290 ms
A-Refractory (PVARP): 250 - 280 ms
V-Refractory (VVRP): 240 - 280 ms
PVARP after PVC: 400 ms
AV Search: On
Search AV Delay: 390 ms
Search Interval: 32 cycles
Blanking: Smart ms
A-Blank after V-Pace: Smart ms
A-Blank after V-Sense: 65 ms
V-Blank after A-Pace: DOO
Noise Response: DOO

Output: 2.5 V @ 0.4 ms, 5.5 V @ 0.4 ms
Sensitivity: AGC 0.25 mV, AGC 0.6 mV
Leads: Pace Sense Bipolar, Sense Bipolar
Sensor: Accelerometer On, Response Factor 8, Activity Threshold Medium, Reaction Time 30 s, Recovery Time 2 min

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Device Settings Report

03 Mar 2015 17:42

Brady (Continued)
Normal Settings:
Rate Enhancements: Up Off %, Down Off %
Sensor: Respiratory Sensor Off

Brady (Post-Therapy) Settings:
Lower Rate Limit: 70 min⁻¹
Output: A 5.0 V @ 1.0 ms, V 7.5 V @ 1.0 ms
Post Therapy Period: 00:30 mm:ss

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Setup
Beeper: Beep when Explant is Indicated On
Telemetry: Enable use of ZIP™ telemetry On

Trending Setup:
Recording Method: 30 Second Average
Duration: 25 hours
Data Storage: Continuous

Leads Status Setup:
Daily Intrinsic Amplitude: On
Daily Impedance: On
Impedance Limits: Low 200 - 2000 Ω, High 20 - 2000 Ω
Beep When Out-of-Range: Off

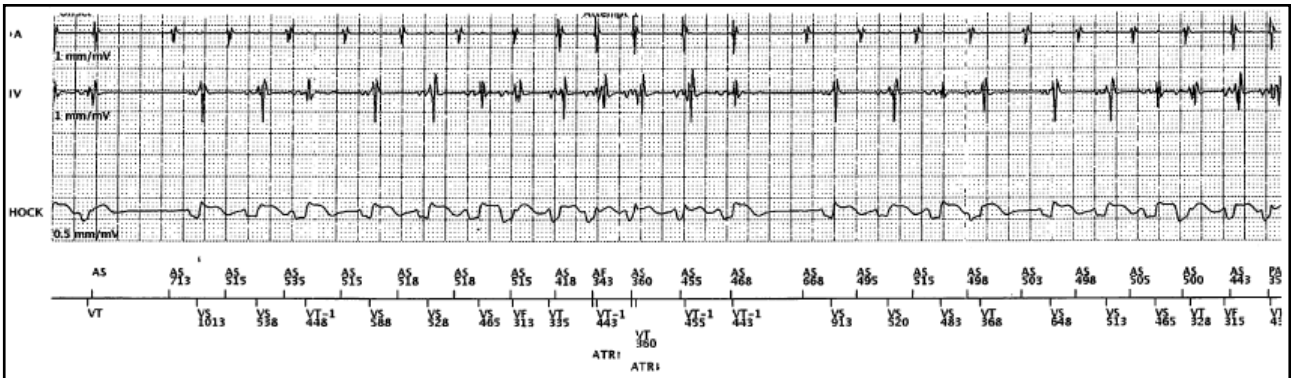
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2868 Software Version: 3.04
F143 Firmware
Version: B_v1.02.00(3.01)

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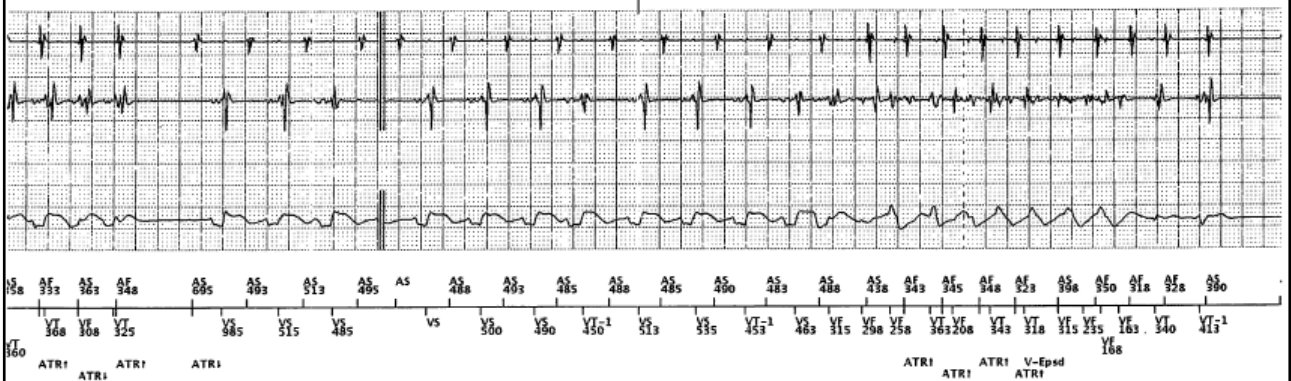
Clinician Signature:

Episode1 ATPx1 41J 41J



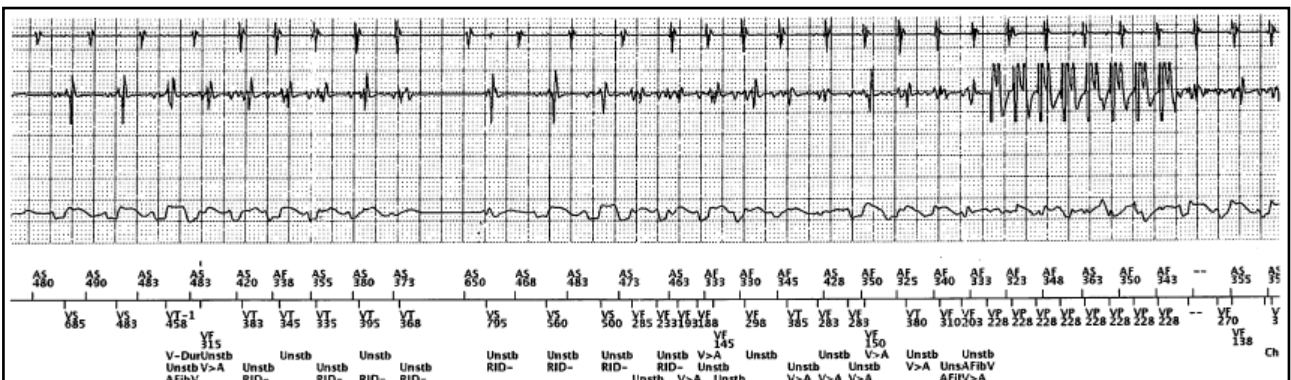
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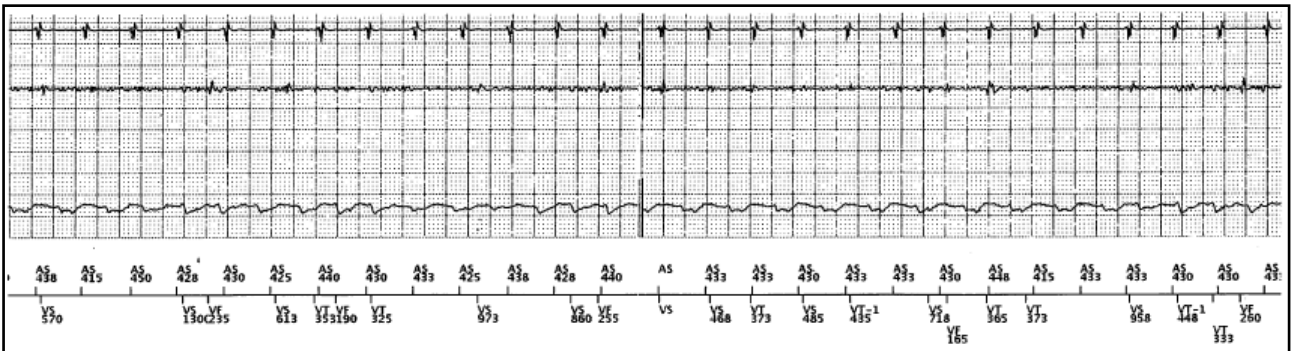
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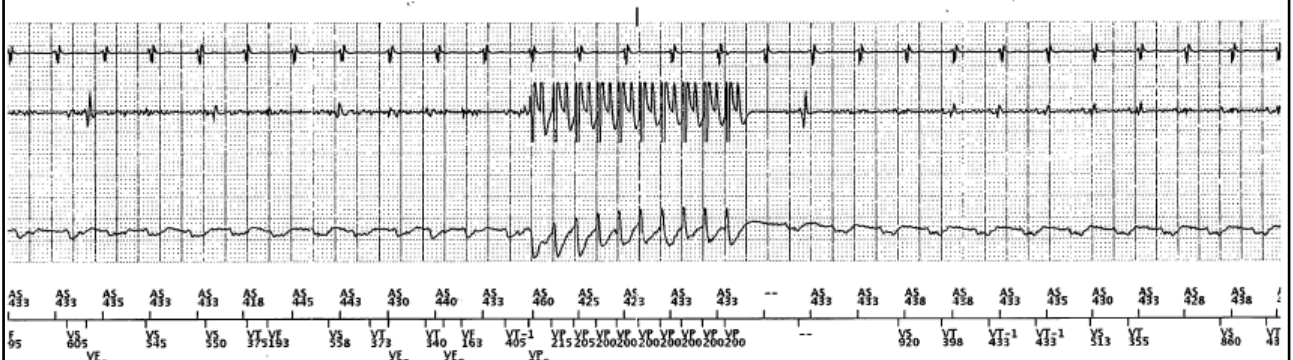
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Episode2 ATPx6 41J 41J 41Jx3



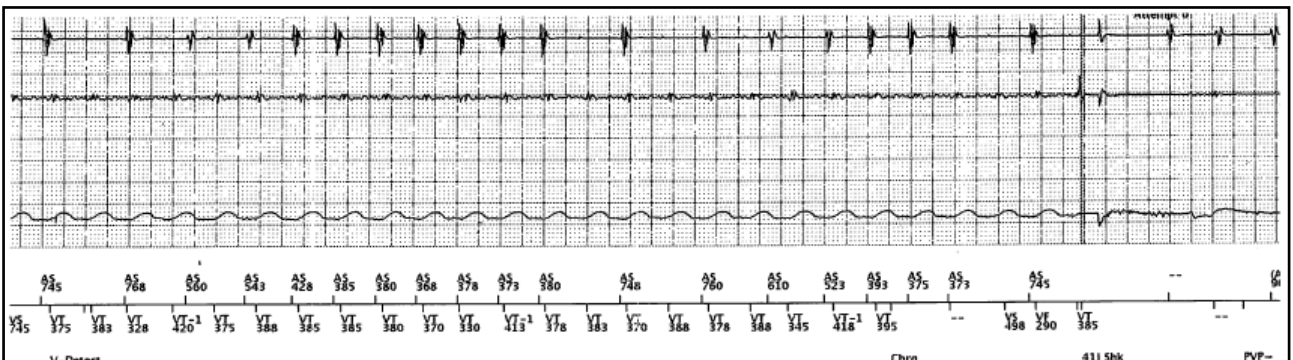
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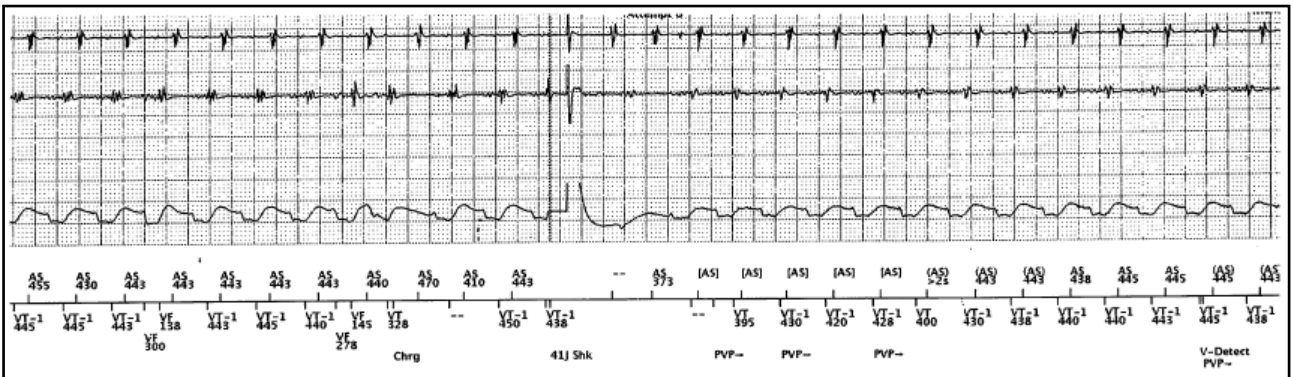
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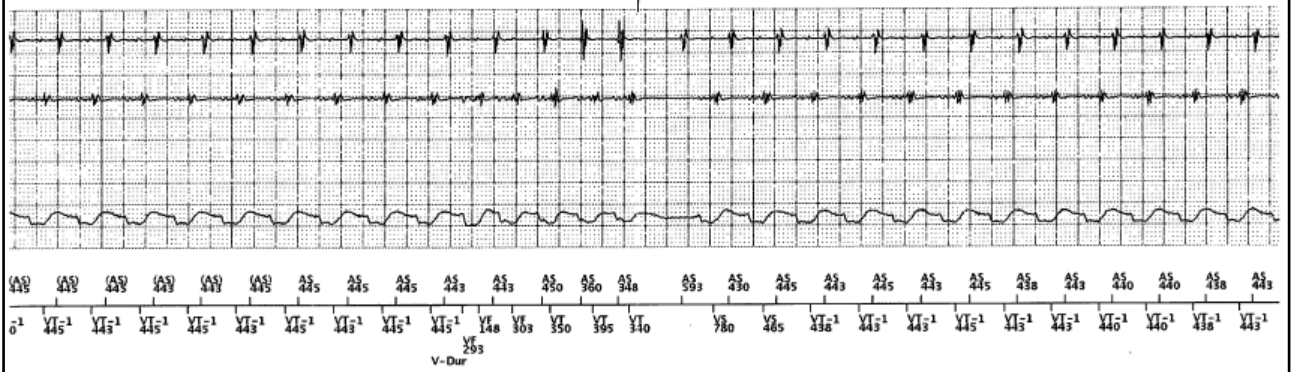
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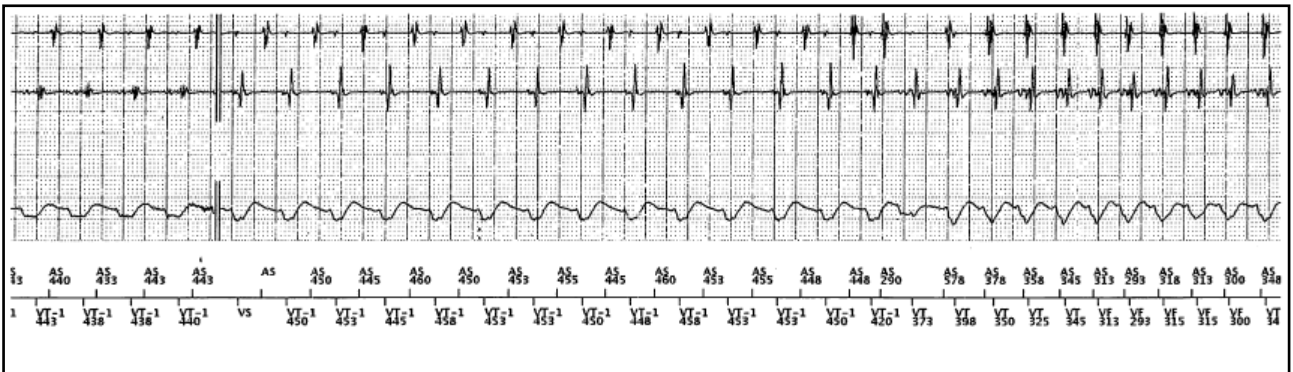
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